SONY

3-757-728-24 (1)

Video Camera Recorder 8

Operation Manual

Video 8 Handycam

CCD-SC5

AC Power Adaptor
AC-V505

RFU Adaptor
RFU-200UC

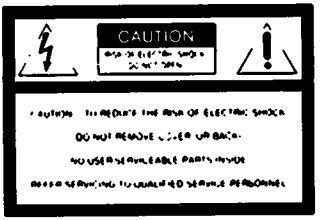
© 1993 by Sony Corporation

Welcome to Video 8

Congratulations on your purchase of this Sony Handycam® camcorder. With your Handycam you can capture life's precious moments with superior picture and sound quality. Your Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820–40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. CCD-SC5
Serial No.

Model No.
Serial No.

DISPOSAL OF LITHIUM ION BATTERY.

LITHIUM ION BATTERY. DISPOSE OF PROPERLY.
You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.
Note: In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution: Do not handle damaged or leaking lithium ion battery.

For the Customers in the U.S.A.

WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation if this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Notice for the customers in Canada.

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

CAUTION FOR THE CUSTOMERS IN THE USA AND CANADA

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Note on TV Color Systems

TV color systems differ from country to country.
To view your recordings on a TV, you need an NTSC system based TV. When you want to use a PAL-M system based TV, you will need an NTSC/PAL-M transcoder (because this is an NTSC system based camcorder). Please check the list on page 30 to see the TV color system of your country.

Precaution on Copyright

Television programs, films, videotapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

About This Manual

As you read through this manual, keep in mind that buttons and settings on the camcorder are shown in capital letters. For example: Set the POWER switch to CAMERA.

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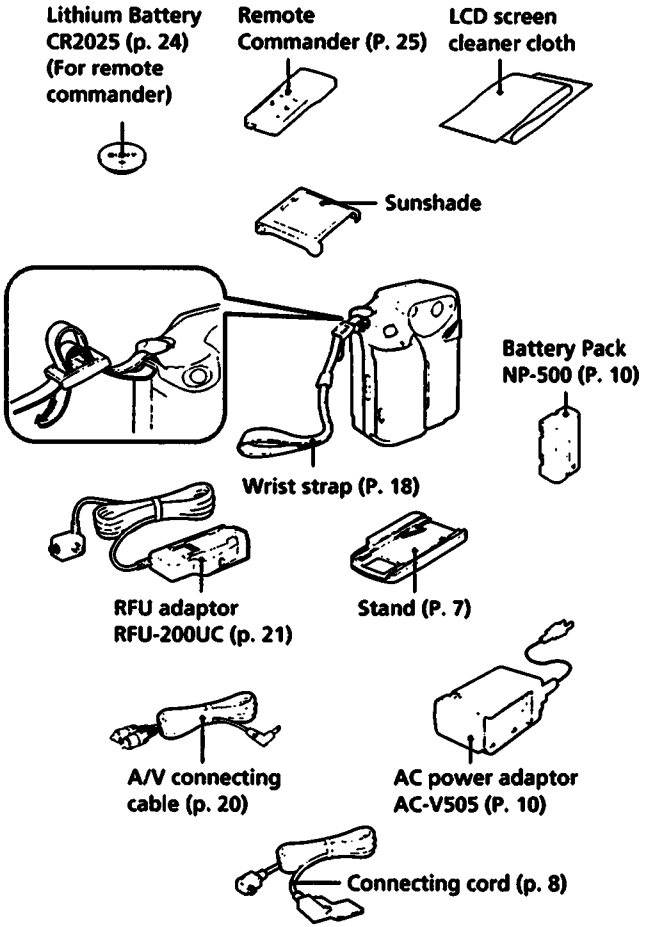
1 Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

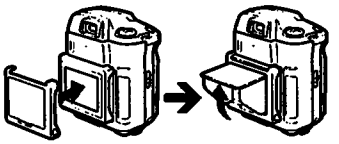

Lithium Battery CR2025 (p. 24) (For remote commander)
Remote Commander (P. 25)
LCD screen cleaner cloth
Sunshade
Battery Pack NP-500 (P. 10)
Wrist strap (P. 18)
RFU adaptor RFU-200UC (p. 21)
Stand (P. 7)
A/V connecting cable (p. 20)
AC power adaptor AC-V505 (P. 10)
Connecting cord (p. 8)

Note on the supplied RFU adaptor

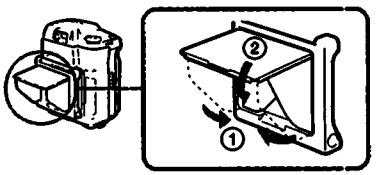
You can use the supplied RFU adaptor only in the country where you bought this camcorder. Since each country has its own electricity and TV color system, you may not be able to use the RFU adaptor when you use the camcorder abroad.

Using the Sunshade

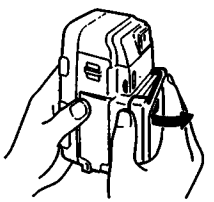
The sunshade prevents dust from sticking to the LCD screen. It also shields out glare from the LCD screen.



To shut the sunshade

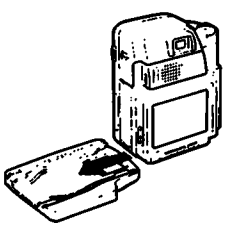


To remove the sunshade



Using the Stand

Use the stand when you record or play back placing the camcorder on a table top or any other flat surface.
When you use the AC power adaptor, connect the adaptor after attaching the stand.
When you use the RFU adaptor, remove the stand.



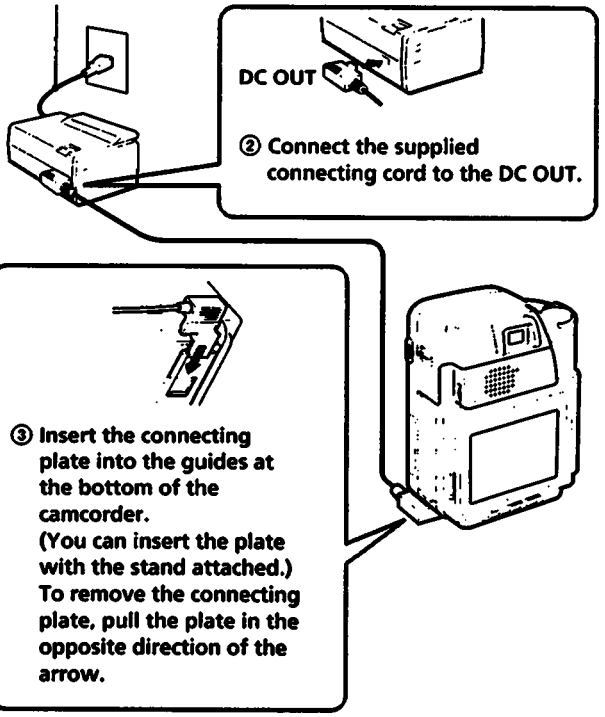
To remove the camcorder, slide in the opposite direction of the arrow.

2 Setting the Date and Time

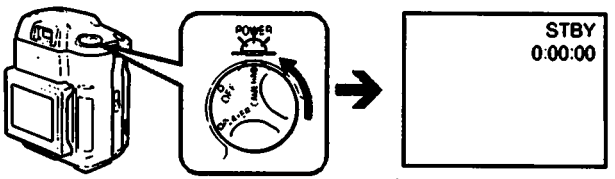
Before you start using your camcorder, you must set the date and time. This camcorder automatically records the date.

1 Connect a power source to set the date and time.

① Connect the supplied AC power adaptor to a wall outlet.

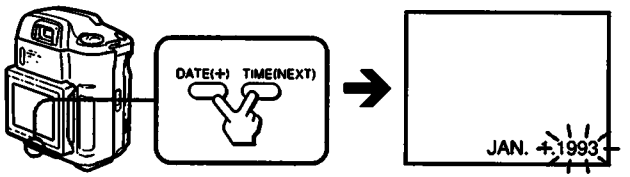

DC OUT
② Connect the supplied connecting cord to the DC OUT.
③ Insert the connecting plate into the guides at the bottom of the camcorder.
(You can insert the plate with the stand attached.)
To remove the connecting plate, pull the plate in the opposite direction of the arrow.

2 Set the POWER switch to CAMERA.



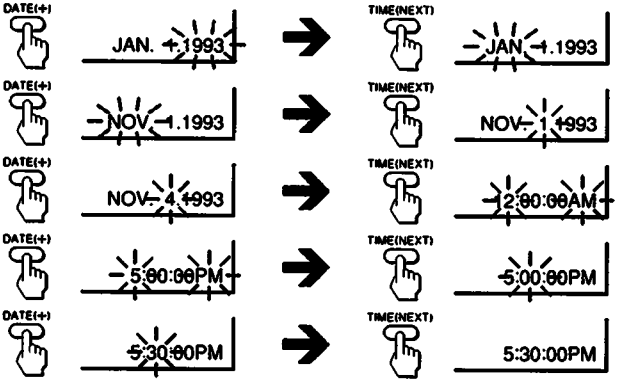
The LCD screen turns on.

3 Press and hold DATE (+) and TIME (NEXT) simultaneously until the year flashes.



4 Adjust the flashing digits for the year, month, day, hour and minutes. Press DATE (+) to increase the number, then press TIME (NEXT) to set the date.

When you finish setting the minutes, the clock starts operating.



To correct the date and time settings

Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 3 to 4.

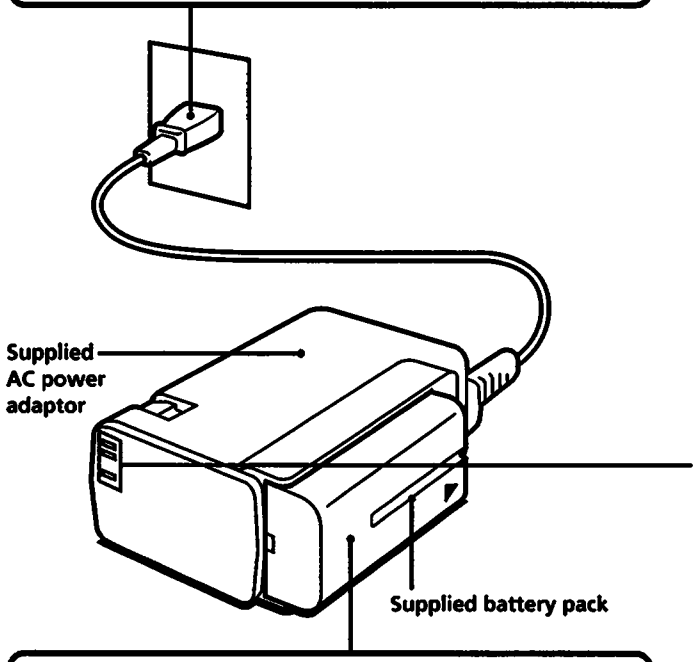
To check the preset date and time

Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

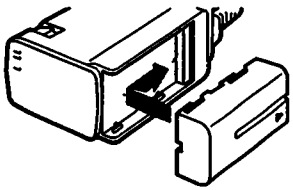
3 Charging the Battery Pack

Before using your camcorder, you first need to charge the supplied battery pack. To charge the battery pack, use the supplied AC power adaptor.

1 Connect the AC power adaptor to a wall outlet.



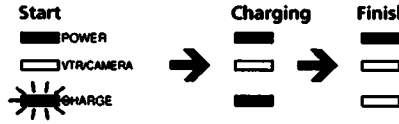
2 Fit and slide the battery pack along the guides.



Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor.

To quickly use
You can also use the battery pack before it is completely charged. When you charge an empty battery pack about for 10 minutes, you can use it about 7 minutes.

The CHARGE lamp on the AC power adaptor lights during charging. When charging is completed, the CHARGE lamp goes out. Charging time is about 2 hours 30 minutes.*



* Approximate charging time to charge an empty battery pack using the AC-V505 (Lower temperatures require a longer charging time.)

Battery life

Situation		Typical * recording time	Continuous ** using time
While recording	LCD ON	20 minutes	40 minutes
	LCD OFF	40 minutes	75 minutes
While playing back		—	45 minutes

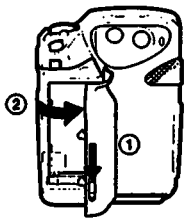
* Approximate recording time when you repeat recording and stanby, or turning the power ON and OFF. The actual recording time may become shorter.
** Approximate continuous using time indoors.

To turn off the LCD screen, see page 18.

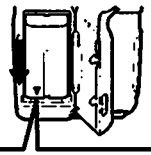
4 Inserting the Battery Pack and a Cassette

Inserting the Battery Pack

1 **Open the cover.**



2 **Insert the battery pack.**

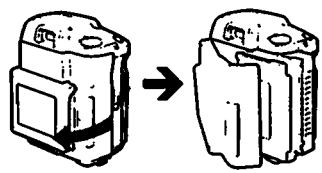


Put the battery pack with the ▼ mark down and slide it in the direction of the arrow.

Inserting a Cassette

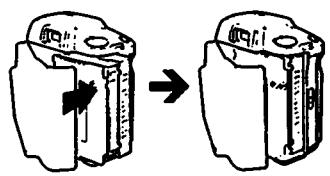
1 **Open the cassette compartment cover until it clicks.**

To insert and eject a cassette, the camcorder first needs a power source.



The cassette compartment automatically lifts up and open.

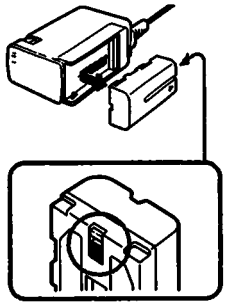
3 **Press the (PUSH) mark on the cassette compartment to close it.**



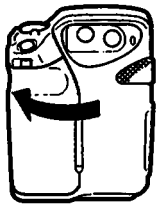
The cassette compartment automatically lifts down.

The switch on the battery pack

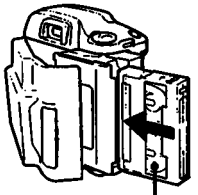
This switch is provided to help you remember the charging status of the battery. When detached from the AC power adaptor, the switch exposes the "green mark". When detached from your camcorder, no mark is indicated.



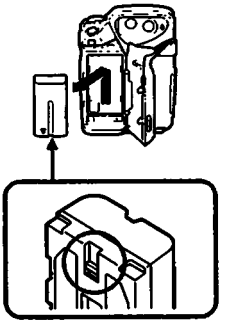
3 **Close the cover.**



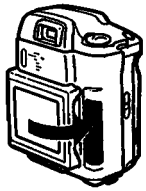
2 **Insert a cassette.**



The window faces forward.



4 **Close the cover until it clicks.**

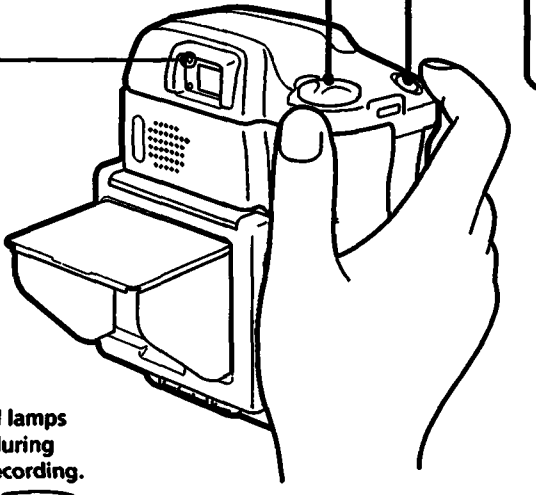


5 Camera Recording

Make sure that a power source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
If you set the date, the date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature).

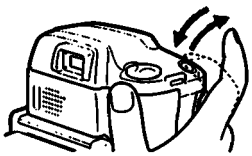
1 Set the POWER switch to CAMERA.

The LCD screen turns on. The camcorder enters Standby mode.



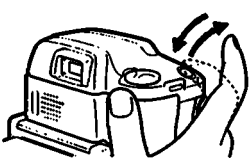
These red lamps light up during camera recording.

2 Press START/STOP to start recording.



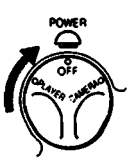
A beep sounds.

3 Press START/STOP again to stop recording.



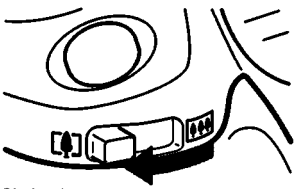
Two beeps sound.

Set the POWER switch to OFF to prevent wearing down the battery when you are not recording.



To record the subject closer

Slide the [🌷] / [🌷🌷🌷] switch to [🌷].



Slide this switch before recording, otherwise the noise is recorded and the transition is not smooth.

Note on the focus range

The picture may be out of focus if you move in too close to the subject.

Check the focus by looking at the LCD screen. The focus range differs depending on the surrounding bright, but in general keep the following distance from your subject:

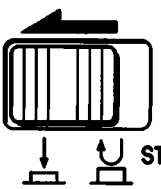
[🌷]: Approximately 5 feet (1.5 m) or more

[🌷🌷🌷]: Approximately 1'/2 feet (0.5 m) or more

Note on the START/STOP button

You can also make recording while pressing down the START/STOP button.

To make the START/STOP button work this way, slide the START/STOP MODE switch at the bottom of the camcorder to ⏚.

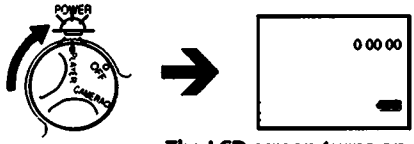


6 Playing Back a Tape

You can watch the playback picture on the LCD screen. You can also watch on a TV screen, by connecting the camcorder to the TV/VCR (p. 20).

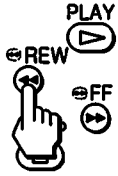
Watching on the LCD screen

1 Set the POWER switch to PLAYER .

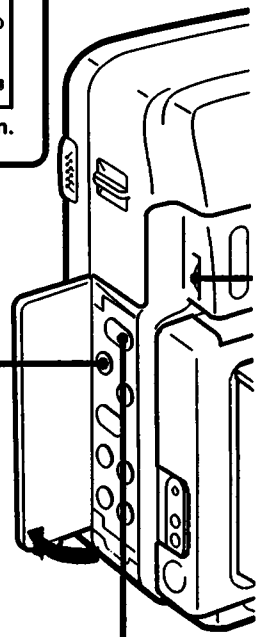


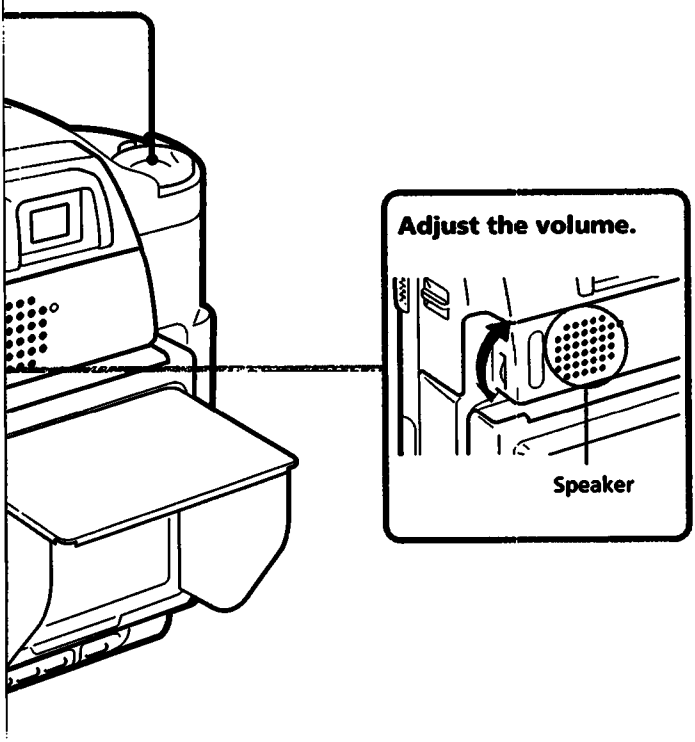
The LCD screen turns on.

2 Press ◀◀ REW to rewind the tape.



3 Press ▷ PLAY.
Playback starts.

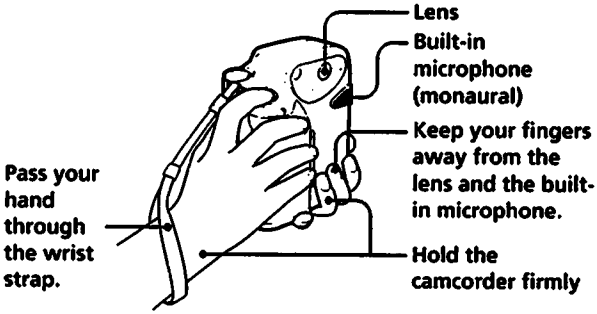


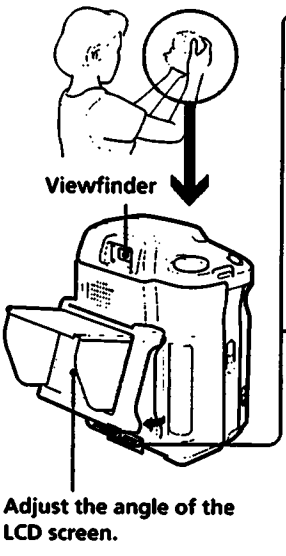


Note on playback

Streaks appear and the sound is muted in the various playback modes.

Useful Information on Recording


Lens
Built-in microphone (monaural)
Keep your fingers away from the lens and the built-in microphone.
Pass your hand through the wrist strap.
Hold the camcorder firmly



To Increase the Battery Life

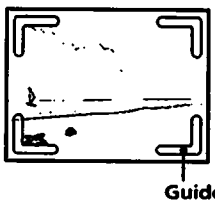
Use the LCD ON/OFF button. The battery lasts longer when the LCD screen is off. Use the viewfinder instead of the LCD screen.

To check the Recorded Picture

Press ⊖. The last few seconds of the recorded portion plays back (Rec Review).

Note on recording area

When using the viewfinder, use the guides as references for shooting.



Note on Standby mode
If you leave the camcorder in Standby mode for 5 minutes or more with a cassette inserted, the camcorder goes off automatically.
This prevents wearing down the battery and wearing out the tape. To record again, set the POWER switch to OFF once and then to CAMERA.

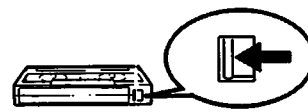
Note on the AUTO DATE feature
The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when you:
- reset the date and time.
- eject and insert the cassette again.
- stop recording within 10 seconds.

To record from the beginning of the tape
Run the tape for about 15 seconds before actually recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.
You can record tapes in SP (standard play) mode only.

Shoot with the sun behind you
When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

To shoot in the dark
We recommend that you use an optional video light. To get the best color, you must maintain a sufficient light level.

To prevent accidental erasure
Slide the tab on the cassette to expose the red mark.

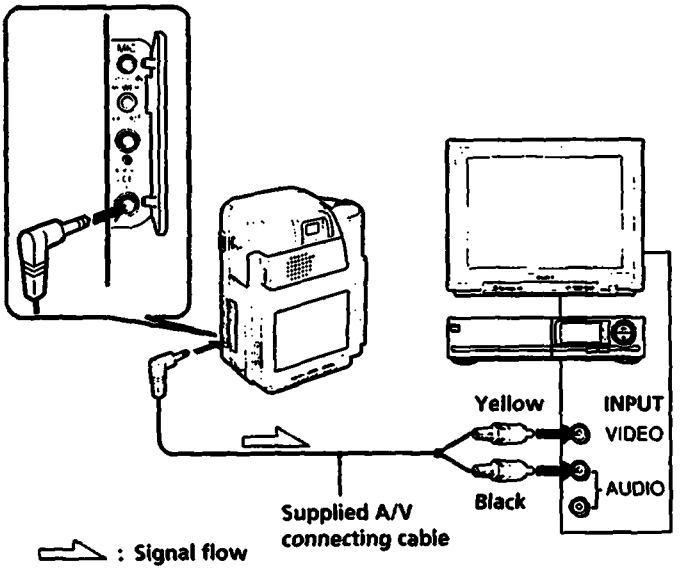


If you try to record with the red mark exposed, the ⌧ and ⏏ indicators flash on the LCD screen, and you cannot record. To re-record on this tape, slide the tab back out so it covers the red mark.

Watching on a TV screen

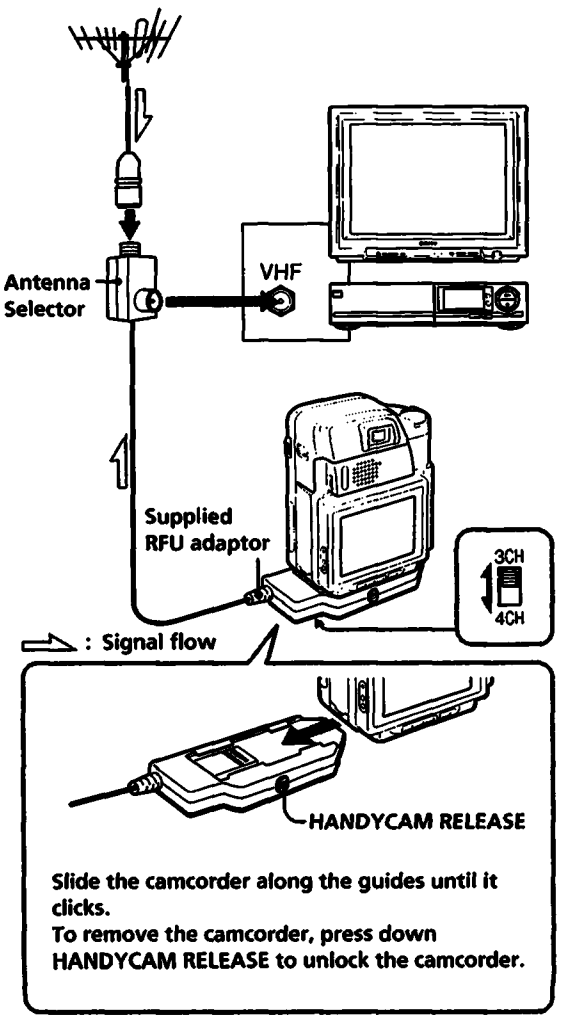
You can use this camcorder as a VCR by connecting it directly to your TV for playback. This section describes several ways to connect the camcorder to your TV. While playing back on a TV screen, turn off the speaker volume control of the camcorder.

Connecting to a TV with Video/Audio Jacks or a VCR
Connect the camcorder to your TV using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR. Before connecting a cable, make sure that the TV is turned off to prevent speaker damage.

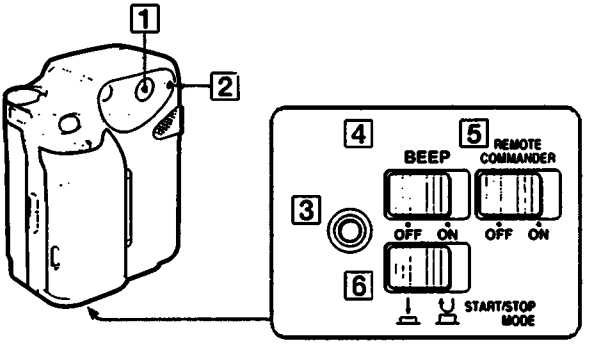


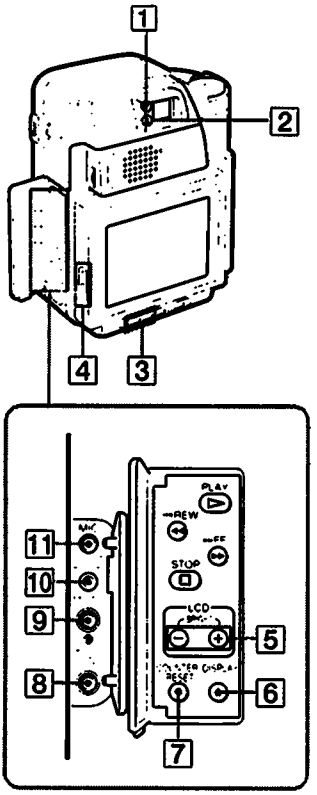
Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using the supplied RFU adaptor. Before hooking up your camcorder, make sure that the TV is turned off to prevent speaker damage .Set the channel selector on the RFU adaptor and your TV channel to VHF channel CH 3 or CH 4, whichever is not active in your area.



Other Functions





1 Camera recording/ battery lamp
This red lamp lights up during camera recording. When it flashes, the battery is weak or the tape is near the end.

2 Warning lamp
This orange lamp flashes when a problem occurs. See the warning indicators on the LCD screen. (p.34)

3 DATE (+) and TIME (NEXT) buttons
Press to record with the date or time. Press again to stop recording with the date or time.

4 COLOR and HUE adjustment screw
If you want to change the color of the picture displayed on the LCD screen, turn the screw slowly using an optional screwdriver. You do not need to adjust it for everyday operation.

1 Lens
To avoid the accidentally recording your fingers, make sure that you do not put your fingers near the lens.

2 Camera recording/ battery lamp
This red lamp lights up during camera recording. When it flashes, the battery is weak or the tape is near the end.

3 Tripod receptacle
Attach a tripod (not supplied) here. When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is shorter than 6.5 mm (9/32 inches). Otherwise, the screw might damage the inner part of the camcorder.

4 BEEP switch
To turn off the beep sound, set this switch to OFF.

5 REMOTE COMMANDER switch
To prevent operating the camcorder accidentally by the Remote Commander, set this switch to OFF.

6 START/STOP MODE switch (p. 15)

5 LCD BRIGHT buttons
Press to adjust the brightness on the LCD screen.
+: More brightness
−: Less brightness

6 DISPLAY button
Press to erase the screen indicators on the LCD screen. To display the indicators, press again. The indicators don't appear on the TV.

7 COUNTER RESET button
Press to reset the tape counter to zero.

8 AUDIO/VIDEO OUT jack
This jack works as an output jack. To view the recorded picture on a TV or to record onto another tape, connect this jack and the AUDIO/VIDEO input jacks on the TV or VCR using the supplied A/V connecting cable.

9 Earphone jack (monaural)
To monitor the sound while viewing the recording picture, connect an optional earphone.
Adjust the earphone volume using the speaker volume control.

10 MIC DC OUT jack
This jack supplies power to an optional external microphone.

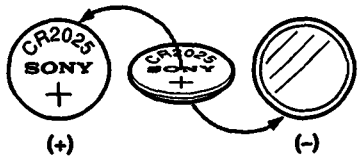
11 MIC (PLUG IN POWER) jack
Connect an optional external microphone (monaural). This jack also accepts a "plug-in-power" microphone. If the microphone has two plugs, connect the DC IN plug to the MIC DC OUT jack on the camcorder.

Using the Remote Commander

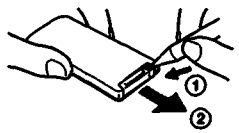
Inserting the Lithium Battery

Before you use the Remote Commander, you must insert the lithium battery. Use the supplied CR2025 lithium battery. Note that the lithium battery has a positive (+) and a negative (–) terminal as illustrated.

Be sure to install the lithium battery so that the terminals on the battery match the terminals on the Remote Commander.

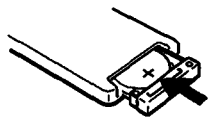


1 **Pull out the lithium battery holder.**



2 **Insert the lithium battery with the positive (+) terminal facing up.**

3 **Push in the lithium battery holder.**

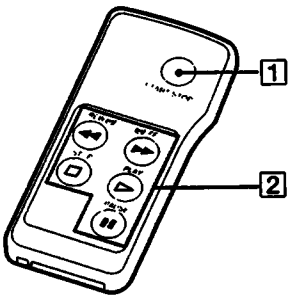


WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of it in fire.

Caution
Keep the lithium battery out of the reach of children. If the battery is accidentally swallowed, consult a doctor immediately.

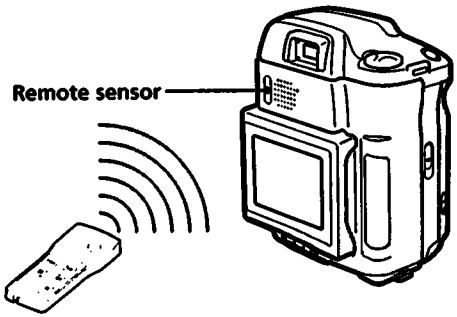
Lithium battery life
The lithium battery for the Remote Commander lasts for about 1 year under normal operation. When the battery becomes weak or dead, the Commander does not work. In this case, **replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

Identifying Parts on the Remote Commander



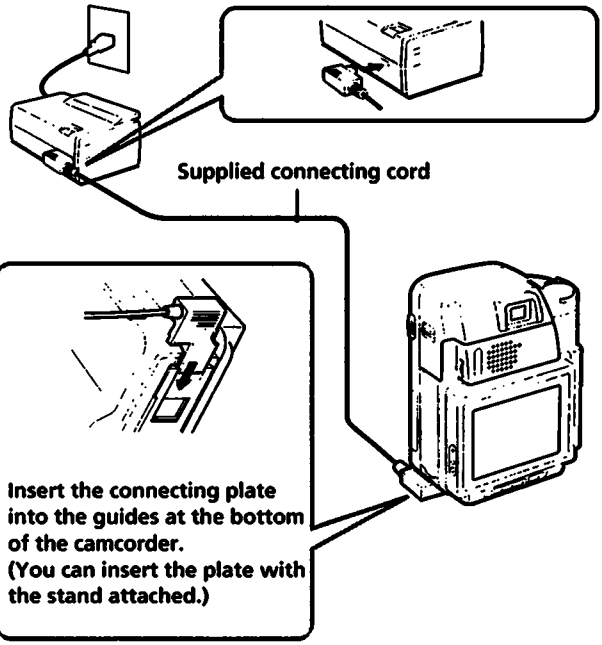
1 START/STOP button
2 Tape transport buttons
PAUSE is available only on the remote commander. When still picture mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Remote Control Direction



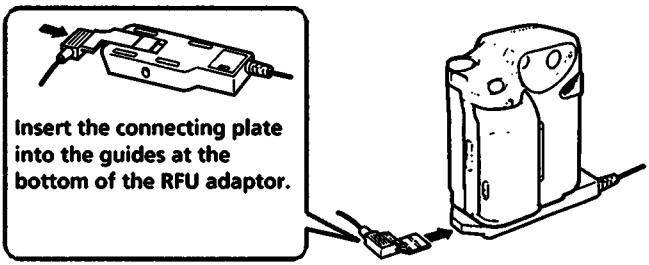
Using House Current as a Power Source

You can use house current as a power source. Use the supplied AC power adaptor and the connecting cord.


Supplied connecting cord
Insert the connecting plate into the guides at the bottom of the camcorder.
(You can insert the plate with the stand attached.)

When You Use the RFU Adaptor

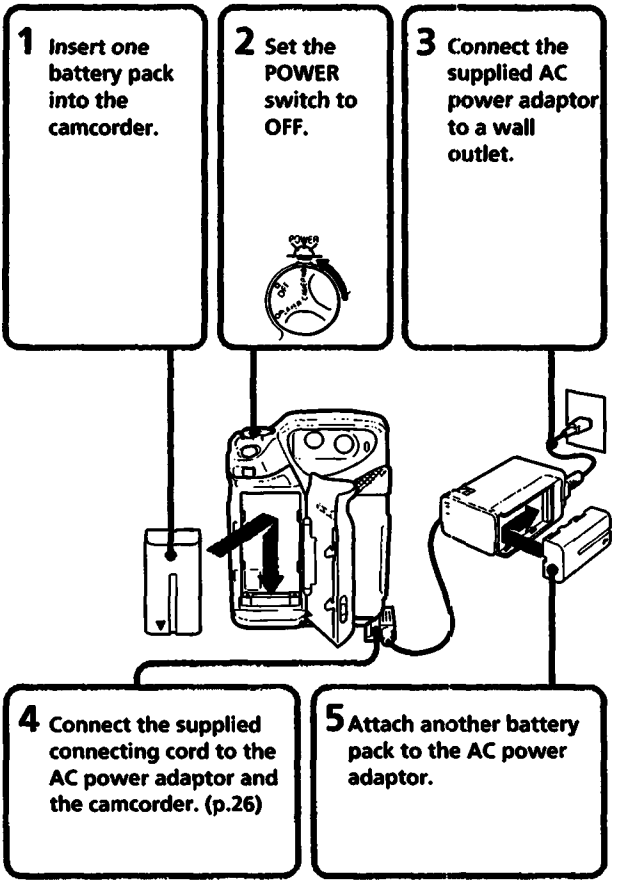
You can connect the AC power adaptor to the RFU adaptor.



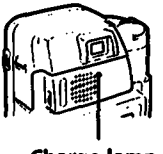
Caution

To prevent accident from a short circuit, do not come into contact with the terminal inside the shutter at the bottom of the camcorder.

Charging Two Battery Packs Consecutively


1 Insert one battery pack into the camcorder.
2 Set the POWER switch to OFF.
3 Connect the supplied AC power adaptor to a wall outlet.
4 Connect the supplied connecting cord to the AC power adaptor and the camcorder. (p.26)
5 Attach another battery pack to the AC power adaptor.

The battery pack attached to the AC power adaptor is charged first. Then the battery pack inside the camcorder is charged. When charging is completed, the CHARGE lamp on the AC power adaptor goes out first. Then the charge lamp on the camcorder goes out. Charging time is totally about 6 hours.



Charge lamp

Tips for Using the Supplied Battery Pack

Note on Charging

Recharge the battery pack whenever you like.
You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. So recharge the battery pack before use.

Preparing the Battery Pack

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.
"Battery life" is measured by continuous camcorder recording time, at a room temperature using a fully-charged battery. The battery is also expended when you:
- insert or eject a cassette.
- set the POWER switch to CAMERA.
- set the POWER switch to PLAYER.

Battery Life is Shorter in a Cold Climate

Battery efficiency is decreased and the battery wears out more quickly in cold weather (50°F/10°C or less).
For longer battery life, we recommend the following:
- Keep the battery pack warm until you're ready to start using the camcorder.
- Charge the battery using the AC power adaptor at room temperature (from 50°F/10°C to 86°F/30°C).

Caution

Never leave the battery pack under temperatures above 140°F/60°C, such as in a car parked in the sun or under direct sunlight.

Maintenance Information

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Clean the LCD screen with the supplied LCD screen cleaner cloth to remove fingerprints.

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.

Slight contamination → **Critical contamination**

If this happens, clean the video heads with the optional cleaning cassette Sony V8-25CLH . After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning for more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

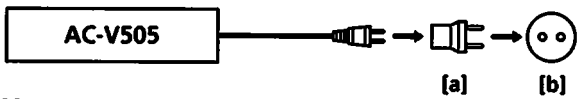
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Using Your Camcorder Abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in Color Systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV. When you want to use a PAL-M system based TV, you will need a NTSC/PAL-M transcoder. Check the following alphabetical list.

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside and on the surface of the camcorder. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When the 📋 and ⏏ indicators flash on the LCD screen, this indicates moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.
Eject the cassette, turn off the camcorder, and leave it with the cassette compartment open for at least one hour in a dry place.
If the 📋 indicator does not light up when you turn on the power, you can use the camcorder again.

On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert a cassette and press a tape transport button, the ⏏ indicator flashes on the LCD screen. If this happens, none the functions except cassette ejection will work.
Eject the cassette, turn off the camcorder, and leave it with the cassette compartment open for at least one hour in a dry place.
If the ⏏ indicator does not light up when you insert the cassette and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

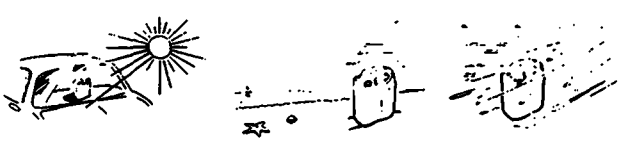
How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to reach room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about one hour).

Camcorder Operation

- Operate the camcorder using 7.2 V (battery pack), or 6.5 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- **Never leave the camcorder under temperatures above 140°F/60°C, such as in a car parked in the sun or under direct sunlight. [a]**
- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]**
- **Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [c]**

[a] **[b]** **[c]**



- Do not push the LCD screen.
- If the unit is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- Constant bright points of light (red, blue, or green) may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.
- Avoid undue strain on the camcorder's wrist strap, such as by unnecessarily swinging the camcorder.

AC Power Adaptor

Charging

- Use only the lithium ion type battery with mark.
- Charge the battery on a flat place without vibration.
- The battery will get hot during charging. However, this is normal.

Charging Temperature

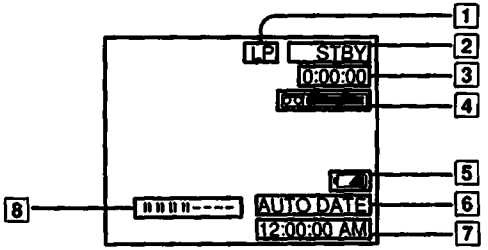
The temperature range for charging is 41°F/5°C to 95°F/35°C. However, to provide maximum battery efficiency, the recommended temperature range when charging is 50°F/10°C to 86°F/30°C.

Others

- The model for USA or Canada: One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet when not in use for a long time . To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if it has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If it does, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- While the unit is in use, it will get hot. However, this is normal.
- Do not place the unit in locations where it is;
  - Extremely hot or cold
  - Dust or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Indicators on the LCD Screen



1 Lights up when playing back a tape recorded in LP mode
2 Tape transport mode
3 Tape counter (h/m/s) The counter does not move when you play back a blank tape.
4 Tape remaining indicator
5 Battery remaining indicator
6 AUTO DATE indicator
7 Date or Time
8 Brightness level indicator

	Indicates a problem with the tape •No cassette has been inserted. •The tape is near the end. •The tape is end. •The tab on the cassette is out (red).
	Indicates you need to eject the cassette. Or this may flash when some other problem has occurred.
	Indicates moisture condensation has occurred. Remove the cassette and do not use the camcorder for at least one hour.
	Indicates the video heads may be contaminated. Clean the video heads using the optional cleaning cassette Sony V8-25CLH.

Specifications

Video Camera Recorder

System

Video recording system
Four rotary heads, Helical scanning FM system
Audio recording system
Rotary head, FM system
Video signal
NTSC color, EIA standards
Usable cassette
8 mm video format cassette (standard 8 mm)
Tape speed
SP mode : Approx. 19/32 inches (1.43 cm)/s
LP mode : Approx. 5/16 inches (0.72 cm)/s (playback only)
Recording time
SP mode : 2h (P6-120)
Playback time
SP mode : 2h (P6-120)
LP mode : 4h (P6-120)
Fast forward/rewind time
Approx. 8 min (P6-120)
Image device
CCD (Charge Coupled Device)
Viewfinder
Optical viewfinder
Lens
Dual lens system
f = 1/16 to 1/2 inches (4 to 12 mm)
1 1/2 to 4 3/4 inches (38 to 115 mm) when converted into a 35-mm still camera
Color temperature
Auto
Minimum illumination
5 lx (F 2.0)
Illumination range
5 lx to 100,000 lx
Recommended illumination
More than 100 lx

LCD screen

Picture
3 inches measured diagonally
2 1/2 × 1 7/8 inches
(61.5 × 44.0 mm)
On-screen display
TN LCD/TFT active matrix method
Total dot number: 75,816 (324 × 234)

Input and output connectors

Video output
Stereomini-jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output
Stereomini-jack -7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ
MIC DC OUT
Special minijack, DC 5V
MIC jack
minijack, -66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm)
Speaker
8Ω
Bottom terminal
20 pin special connector

General

Power requirement
On battery mounting surface
7.2 V (battery pack)
6.5 V (AC power adaptor)
Average power consumption
7.2 W (camera recording) including the LCD screen
Installation
Vertically, Horizontally
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
-4°F to 140°F (-20°C to 60°C)
Dimensions
Approx. 4 1/4 × 5 7/8 × 3 1/8 inches (w/h/d)
(105 × 141 × 84 mm)
Mass
About 1 lb 6 oz (640 g) excluding the battery pack, cassette, and wrist strap
About 1 lb 11 oz (790 g) including the battery pack NP-500, cassette P6-120, and wrist strap
Microphone
Electric condenser microphone, monaural type
Supplied accessories
See page 6

AC power adaptor

Power requirements
100-240 V AC* , 50/60 Hz
Power consumption
18 W
Output voltage
DC OUT : 6.5 V, 1.5 A in operating mode
Battery charge terminal: 8.4 V 1.1 A in charging mode
Application
Sony battery packs NP-500 lithium ion type
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
-4°F to 104°F (-20°C to 60°C)
Dimensions
Approx. 2 3/4 × 1 3/4 × 4 1/4 inches (w/h/d)
(68 × 44 × 107 mm)
including projecting parts and controls
Weight
Approx. 9 oz (260 g)

* Canadian Standard Association (CSA) certifies 120 V AC only.

Design and specification are subject to change without notice.

Troubleshooting

	Symptom
While recording	START/STOP does not operate.
	The power goes off.
While playing back	The tape does not move when a tape transport button is pressed.
	Streaks appears in the still picture.
	The playback picture is not clear.
While recording / playing back	The power is not on.
	The battery pack has quickly discharged.
	The cassette cannot be removed from the compartment.
	Battery remaining indicator does not indicates full, when you insert the charged battery pack.
	The picture does not appear on the LCD screen.
	The indicator appears on the LCD screen.

Cause	Corrective Actions
• The tape is stuck to the drum. • The tape has run out.	• Eject the tape. • Rewind the tape or use a new one.
• The POWER switch is not set to CAMERA. • The tab on the cassette is out (red).	• Set it to CAMERA. • Use a new tape or slide the tab.
While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes.	Set the POWER switch to OFF once and set it to CAMERA again.
• The POWER switch is not set to PLAYER. • The tape has run out.	• Set it to PLAYER. • Rewind the tape or use a new one.
This is normal.	—
• The channel or input for the camcorder is not selected on the TV. • The video head may be dirty.	• Select the correct input. • Clean the heads using the Sony V8-25CLH cleaning cassette.
• The battery is not attached. • The battery is dead. • The AC power adaptor is not connected to a wall outlet.	• Attach the battery. • Use a charged battery. • Connect the AC power adaptor to a wall outlet.
• The ambient temperature is too low.	—
• The battery pack has not been charged fully. • The battery pack is completely dead, and cannot be recharged.	• Charge the battery pack again. • Use another battery pack.
The battery is dead.	Use a charged battery or connect the AC power adaptor.
The ambient temperature is too low.	—
Incorporated fluorescent tube is worn out.	Please contact your Sony dealer.
The lithium battery inserted in dead.	Please contact your nearest Sony dealer in connection with the product with the problem.

(continued)

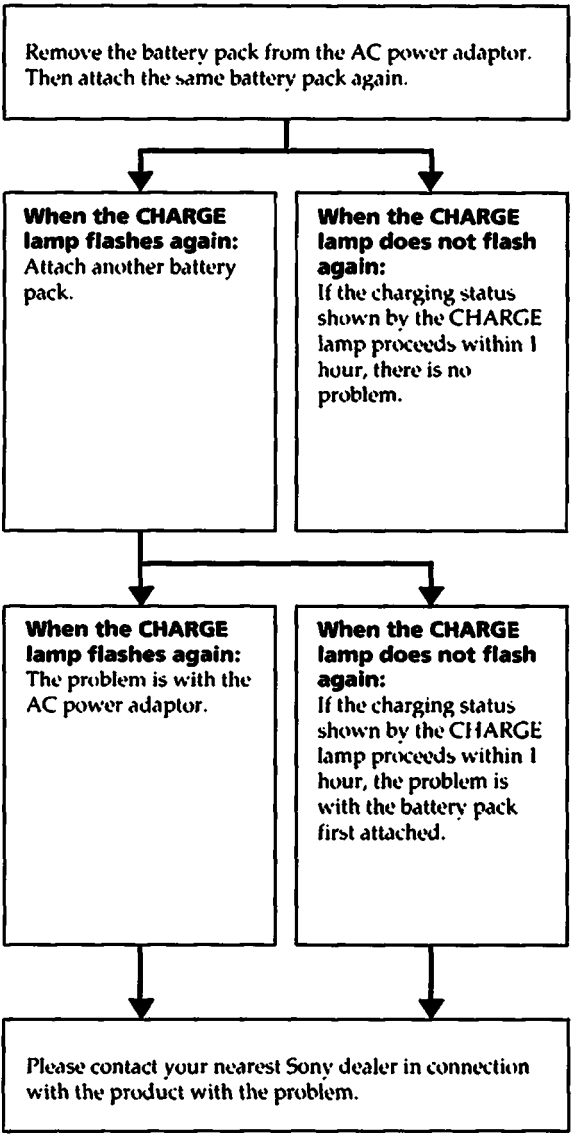
Troubleshooting (continued)

	Symptom
Others	The supplied Remote Commander does not work.
AC power adaptor	The POWER lamp does not light.
	The CHARGE lamp flashes.

Cause	Corrective Actions
• Something interferes with the infrared rays.	• Remove the obstacles.
• The lithium battery is not inserted with the correct polarity.	• Insert the lithium battery with the correct polarity.
• The lithium battery is dead.	• Insert a new one.
	Disconnect the power cord. Reconnect the power cord.
See the chart on page 42.	See the chart on page 42.

When the CHARGE Lamp on the AC Power Adaptor Flashes

Check through the following chart.


Remove the battery pack from the AC power adaptor. Then attach the same battery pack again.
When the CHARGE lamp flashes again: Attach another battery pack.
When the CHARGE lamp does not flash again: If the charging status shown by the CHARGE lamp proceeds within 1 hour, there is no problem.
When the CHARGE lamp flashes again: The problem is with the AC power adaptor.
When the CHARGE lamp does not flash again: If the charging status shown by the CHARGE lamp proceeds within 1 hour, the problem is with the battery pack first attached.
Please contact your nearest Sony dealer in connection with the product with the problem.

If you have any question about this product, call
Sony Customer Information Center
East Coast: 201-930-7669 (SONY) NJ
Central: 708-250-7669 (SONY) IL
West Coast: 714-821-7669 (SONY) CA

or write to:
Sony Customer Infromation Center
Sony Drive, Mail Drop #T1-11,
Park Ridge, NJ 07656

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